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SHORTER ARTICLES AND DISCUSSION

NOTE ON ASSORTATIVE MATING IN MAN WITH RESPECT TO HEAD SIZE AND HEAD FORM

ASSORTATIVE mating in man has been much discussed[1] but has been little investigated by scientific methods.

For characters such as age of husband and age of wife where there is an obvious preferential mating we may have coefficients of assortative mating as large as $r = +.75$. For stature, span and forearm Pearson has determined coefficients of about $+.20$ for span and span, $+.20$ for forearm and forearm, and $+.28$ for stature and stature in husbands and wives in his English series. The cross correlations for these various characters are in general smaller. For bodily characters other than stature the data are very few and are in general unsatisfactory.

With characteristic caution Pearson long ago suggested[2] that coefficients of assortative mating might be due to the husbands and wives being drawn from the same local races. The importance of this factor seems to be very small in his own materials.

This question must continually recur whenever assortative mating for physical characters is discussed. It seems very desirable, therefore, to obtain some measure of the correlation between husband and wife with respect to cephalic index, a character which has been considered of great importance by anthropologists in differentiating the races of Europe. For head size and head form we have had, as far as we are aware, until recently only the data for forty-eight families of Eastern European (Russian) Jews living in New York City, for which Boas[3] found assortative matings for cephalic index measured by $r = .15 \pm .10$.

Recently Frets in a series of papers[4] has given data for head length, head breadth and cephalic index in a series of Dutch families. He has himself calculated a coefficient of correlation of .039 ± .034 for the cephalic index of husband and wife in 389 families.[5] We have felt it desirable to determine the correlation for length and width of head, as well as that for index.

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[1] The literature of the field has been reviewed up to 1912 by one of us: Harris, J. Arthur, "Assortative Mating of Man," *Popular Science Monthly*, 80: 476–492. 1912.

[2] Pearson, K., "Data for the Problem of Evolution in Man. III. On the Magnitude of Certain Coefficients of Correlation of Man," etc., *Proc. Roy. Soc.*, Vol. 66: 23–32. 1899.

[3] Boas, F., "Heredity ir Head Form," *Amer. Anthrop.*, N. S., 5: 532. 1903.

[4] Frets, G. P., "Heredity of Head Form in Man," *Genetica*, 3: 193–400. 1921. This paper contains the original measurements. These have been to some extent checked against his other papers.

Because of a suggestion by Pearson (*loc. cit.*) that the correlation apparently indicating assortative mating may be really due in some cases to an association of fertility with homogamy, we have thought it desirable to calculate all the coefficients of correlation in two ways: (1) by using the actual number of parents, and (2) by weighting the parents with the number of offspring indicated in Frets' tables.[6]

The correlation coefficients are as follows:

Length of husband's head and length of wife's head:
Parents only, $r = + .0487 \pm .0377$. $r/Er = 1.29$.
Parents weighted with their children,
$r = + .0616 \pm .0376$. $r/Er = 1.63$.

Breadth of husband's head and wife's head:
Parents only, $r = + .1197 \pm .0372$. $r/Er = 3.22$.
Parents weighted with their children,
$r = + .1184 \pm .0372$. $r/Er = 3.18$.

Index of husband's head and index of wife's head:
Parents only, $r = + .0231 \pm .0377$. $r/Er = 0.61$.
Parents weighted with their children,
$r = - .0546 \pm .0376$. $r/Er = 1.44$.

The constants are with one exception positive in sign. That for the breadth of husband and breadth of wife may perhaps be considered statistically significant in comparison with its probable error. The others, particularly that for the cephalic index, can not be so considered.

The coefficients may, therefore, indicate a slight assortative mating for the dimensions of the head. The coefficients, in common with those for physical characters other than stature, are relatively low. That the correlation for the cephalic index is so low is a point of particular interest. If cephalic index be a character of great importance in distinguishing races, and if correlations which have been demonstrated between the physical characteristics of husband and wife be due primarily to the tendency to marry within the same racial group, one might expect a large correlation for cephalic index. Instead we find the lowest correlation of the three determined.

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[5] Frets, G. P., "Erfelijkheid, correlatie en regressie," *Genetica*, 3: 1–27. 1921.

[6] We are able to abstract from Frets' tables 319 pairs of parents in which there were no indications of typographical errors when different tables were checked against each other. These had a total of 1328 recorded children. In calculating the probable errors of the coefficients we have used the unweighted number of parents as N.

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A GYNANDROMORPH IN DROSOPHILA MELANOGASTER[1]

In 1916 Hyde and Powell described a mosaic female with one eye eosin and the other blood. They interpreted this case in the light of Morgan's suggestion of 1914 that "Gynandromorphs and mosaics may arise through a mitotic dislocation of the sex chromosomes." In other words they believed one X chromosome carrying the gene for eosin went into the cells of one eye and the other X chromosome carrying the gene for blood went into the other eye. In 1919 Morgan and Bridges described a large number of gynandromorphs. The hypothesis of chromosomal elimination explains most of them, but a number of special cases are explained in other ways. One of their special cases was a male with one eye eosin and the other eosin vermilion. They explained this case by assuming that the egg had two nuclei, one of which after maturation had an eosin vermilion X chromosome and the other an eosin X chromosome. Further, they assumed each nucleus to have been fertilized by a Y sperm. These hypotheses would explain the facts that the individual was male throughout and that one eye was eosin vermilion and the other eosin.

In our experiments a somewhat similar mosaic appeared. The individual was made throughout, with one eye garnet and one white. The parentage was as follows: a garnet male was mated to a yellow white female. An F_1 wild-type daughter was mated to an F_1 yellow white male. From this pair of parents the mosaic arose. It was fertile and was bred to a garnet female. In F_1 all males and females were garnet. The F_1 garnet males and females were inbred. In F_2 the females were garnet but the males were garnet and white in approximately equal numbers (1,089 garnet to 1,026 white). This demonstrates very clearly that the mosaic was genetically a

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[1] Zoological Laboratory Contribution No. 191. Indiana University.